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NATIONAL COMMUNICATIONS

COMMUNICATIONS FROM PARTIES INCLUDED IN ANNEX I TO THE CONVENTION

Updated information on greenhouse gas emissions and projections

Note by the secretariat

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I. INTRODUCTION

A. Mandate

1. The Subsidiary Body for Implementation (SBI), at its sixth session, requested the secretariat to submit, at its next session, a report on progress achieved so far in returning individually or jointly to their 1990 level anthropogenic emissions of CO_2 and other greenhouse gases not controlled by the Montreal Protocol and projected emissions by sources and removals by sinks of such gases in the year 2000 by each Annex I Party, on the basis of its national communication (FCCC/SBI/1997/16, paragraph 16 (f)).

B. Scope of the note

2. The present note compiles the available numerical data on greenhouse gas inventories and projections drawn from both first and second national communications as well as from in-depth review reports and annual inventory submissions, where appropriate. It also contains graphs and charts presenting the numerical data in a visual way. In compiling the inventory information the secretariat has used for the aggregation and calculation of percentages the data for the latest available year, thus sometimes using 1994 data if 1995 data were not available. It was felt that this approach would not significantly affect the conclusions on the progress achieved so far. The projections for 2000 provided by Parties are not comparable and, in accordance with decision 2/CP.1 (FCCC/CP/1995/7/Add.1), national totals were not added.

C. Possible action by the SBI

3. The SBI may wish to consider this note with a view to assessing the progress achieved so far by each Annex I Party in returning individually or jointly to their 1990 level anthropogenic emissions of CO_2 and other greenhouse gases not controlled by the Montreal Protocol and projected emissions by sources and removals by sinks of such gases in the year 2000. In doing so the SBI may also wish to take into consideration the first compilation and synthesis of second national communications (FCCC/SBI/1997/19 and Add.1).

II. PRESENTATION OF RESULTS

4. Inventory data for 1990-1995 and projections for 2000 for individual Annex I Parties are presented in tables 1 to 5. Tables 1 to 3 contain information on the level of total emissions of the main GHGs (carbon dioxide, excluding the land-use change and forestry sector, methane (CH_4) and nitrous oxide (N_2O) in 1990 and the last reported year in mass units, the change in these emissions over the period 1991-1995 expressed in percentage relative to 1990, and the projected level for 2000 in both mass units and percentage relative to 1990 levels. Table 4 contains the same information on total emissions of all GHGs combined (expressed as CO_2 equivalent), excluding land-use change and forestry, while table 5 presents data on carbon dioxide emissions and removals from the land-use change and forestry sector, their impact on total national CO_2 emissions in 1990 and 1995, and projections for this sector for 2000 both in

mass units and percentage relative to the baseline level. Some tables are accompanied by charts illustrating information presented therein and providing additional information, on aspects such as the shares of some sectors in total emissions of the individual gases or changes in emissions of GHGs by sector for 1990-1995.

5. Inventory data on total CO_2 emissions, excluding the land-use change and forestry sector, (see table 1) indicate that for some Parties (Australia, Canada, Finland, Ireland, Japan, the Netherlands, Norway, the United States of America) there is a clear rising trend in the period 1990 to 1995. A number of Parties exhibit a declining trend (Germany, the United Kingdom and almost all the Parties with economies in transition), whereas for the remaining Parties there is no discernible trend with emissions fluctuating either above (Denmark, Iceland, New Zealand, Portugal, Sweden) or around the 1990 level (Austria, France, Switzerland). No information on trends could be presented for Greece, Italy, Luxembourg and Spain since their latest inventory data are still pending. Since for all Annex I Parties fuel combustion was the dominant source of CO_2 emissions in 1990 (about 97 per cent of total emissions originated from this source), it determined the overall change in these emissions in 1995 (or 1994) compared to 1990. Total CO_2 emissions for the 29 Annex I Parties which provided inventory information for the base year and 1995 (or 1994) taken together decreased from 1990 to 1995 by 4.6 per cent.

6. The relative contributions of the 29 Parties for which the latest inventory data were available, to the change in total CO_2 emissions from these Parties taken together are presented in figure 1. The figure indicates shares (in percentage) of Parties for which CO_2 emissions were lower/higher in 1995 than in 1990, in the total decrease/increase of these emissions in 1990-1995; the total decrease and total increase were taken separately as 100 per cent each. The figure indicates that the overall reduction is mainly due to the contributions from Germany, Poland and the Russian Federation, which together accounted for more than 85 per cent of the decrease in total CO_2 emissions; the remaining Parties with decreased emissions each had a share of less than 4 per cent. The bulk of the increase is due to Canada, Japan and the United States of America, which together accounted for 85 per cent, the remaining Parties with increased emissions each having a share of less than 4 per cent.

7. As can be seen from table 1 and accompanying charts, 15 Parties (Australia, Belgium, Canada, Finland, France, Greece, Iceland, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Sweden, the United States of America) projected an increase in CO_2 emissions in 2000 compared to 1990 levels, the increases ranging from 3-4 per cent (France and Sweden) to 22-26 per cent (Iceland, New Zealand, Norway, Spain). Twelve Parties projected a stabilization or decrease of these emissions for 2000; among these were Austria, Denmark, Germany, Luxembourg, the Netherlands, Switzerland and the United Kingdom as well as seven Parties with economies in transition. Projected increases or decreases of CO_2 emissions for 2000 in mass units relative to 1990 can be seen in figure 2.

8. A comparison of inventory data with projections gives an estimate of the consistency of the trend with the level of CO_2 emissions projected for 2000 (see table 1 and accompanying chart). For those Parties which projected an increase, the projections seem to be consistent with

the inventory data, although Canada's emissions already reached in 1995 the level projected for 2000 and in Japan emissions in 1995 were almost 6 per cent higher than projected for 2000. Projected decreases are consistent with the actual trends in emissions for Parties with economies in transition as well as for Germany and the United Kingdom. The trends for Luxembourg and Switzerland are not inconsistent with the projected reduction in 2000, whereas the developments seem to be more challenging for Denmark and the Netherlands.

9. Total methane emissions decreased in 1995 compared to 1990 by almost 4 per cent for reporting Annex I Parties as a whole. CH_4 emissions from fuel combustion decreased in this period by 10 per cent, fugitive fuel emissions by 8 per cent and emissions from agriculture by 4 per cent, whereas methane emissions from waste increased by 6 per cent.

10. Total CH_4 emissions in 1995 were below or at the 1990 level in the majority of Annex I Parties. Only Canada, Norway and the United States of America reported an increase of 17, 9 and 5 per cent, respectively. The majority of Parties, including Norway and the United States of America, project a decrease or stabilization in CH_4 emissions in 2000, whereas Australia, Austria, Canada, Ireland and Luxembourg project an increase ranging from 2 per cent for Austria to 13 per cent for Canada. The projections for methane seem to be generally consistent with the inventory data for 1990-1995 (see table 2 and accompanying graphs).

11. Emissions of nitrous oxide also decreased from 1990 to 1995 for the group of Annex I Parties; this decrease amounted to almost 5 per cent, with N_2O emissions from industrial processes and agriculture declining by 8 and 12 per cent, respectively, and emissions from fuel combustion (transport) increasing by 11 per cent. An increasing trend is discernible in the period 1990-1995 for Austria, Canada, Denmark, Japan, Luxembourg, the Netherlands and the United States of America. After and initial decline N_2O emissions started to grow in the Czech Republic, Hungary and Slovakia; the remaining Parties with economies in transition exhibited a declining trend. In Australia, Finland, France, Germany, Iceland, Ireland, New Zealand, Norway, Sweden and Switzerland these emissions fluctuated below or at the 1990 level, whereas in Belgium and Portugal they fluctuated above the 1990 level.

12. The majority of Parties (16 of them) projected for 2000 a stabilization or decrease in N_2O emissions, whereas ten Parties projected an increase. Some Parties did not provide projections for nitrous oxide emissions. Projections for 2000 seem to be generally consistent with the trends for 1990-1995, although it may be noted that Canada, the Netherlands and the United States of America, which projected near-stabilization or decrease for 2000 compared to 1990, already have N_2O emissions higher in 1995 than in 1990 (see table 3 and accompanying graphs).

13. Inventory information on other gases, especially on the "new gases" - hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6) - was less consistent and uniform than for the main GHGs thus preventing the secretariat from presenting information on their trends in 1990-1995. Parties that provided HFC projections for 2000 (Canada, Germany, Finland, Iceland, Norway, New Zealand, Sweden and the United Kingdom) expect a significant increase in these emissions because of the growing use of HFCs as replacements for

ozone-depleting substances. Emissions of PFCs are projected to decrease in Germany, Iceland, Norway, New Zealand and the United Kingdom and increase in Canada, Finland, the Netherlands and Sweden. As for SF_6 emissions, Germany, Finland, Iceland, New Zealand and the United Kingdom projected an increase and Canada and Norway a decrease. The United States of America projected an increase in emissions of these "new GHGs" as a whole expressed in CO_2 equivalent.

14. Total anthropogenic emissions of all GHGs, excluding the land-use change and forestry sector, in the period 1990-1995 generally exhibited trends similar to those for CO_2 emissions, which is explained by the fact that CO_2 emissions constituted the largest share (more than 80 per cent) of all GHGs. The same is true for projections for 2000, where 14 Parties (Australia, Belgium, Canada, Finland, Greece, Iceland, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Sweden and the United States of America) projected an increase (based on unadjusted figures) and twelve Parties (Bulgaria, the Czech Republic, Denmark, France, Germany, Hungary, Latvia, Luxembourg, Poland, Slovakia, Switzerland and the United Kingdom) a decrease (see table 4 and accompanying charts). For six Parties (Austria, Estonia, Portugal, Romania, the Russian Federation and Spain) projections are not presented here since these Parties did not provide projections for all main GHGs.

15. Table 5 contains inventory information on the land-use change and forestry sector for 1990 and 1995 as well as the relative impact of this sector on national CO_2 totals and projected emissions or removals for 2000. As can be seen from the table, this sector was a net sink for the majority of Parties and thus in some cases could have a major impact on national totals if removals of CO_2 were subtracted from emissions. Nevertheless, the data presented in table 5 should be treated with caution since inventory data for the land-use change and forestry sector were reported to have a medium level of confidence at best and methodologies used by individual Parties varied widely. For these reasons the aggregation of data on emissions or removals and their year-by-year comparisons were not feasible.

16. Twenty Parties reported projections in the land-use change and forestry sector. For 18 Parties this sector was projected to remain a net sink, but for Australia and the United Kingdom it was projected to remain a net source, although a smaller one. For 11 Parties (Bulgaria, the Czech Republic, France, Ireland, Italy, Japan, the Netherlands, Slovakia, Spain, Switzerland, the United States of America) net CO_2 removals by the land-use change and forestry category were projected to increase, and for five (Finland, Latvia, Norway, New Zealand, Sweden) to decrease. Two Parties (Belgium, Denmark) projected removals to remain stable.

III. CONCLUSIONS

17. Inventory data for Parties for which aggregation was feasible, indicate that in the period from 1990 to 1995 anthropogenic emissions of carbon dioxide, methane and nitrous oxide for these Parties *taken together* each decreased by 4 to 5 per cent. In the case of CO_2, the dominant greenhouse gas, the decrease was largely due to declines in a few Parties offseting increases in other Parties. It should be noted that some Annex I Parties have yet to submit their inventory data for 1990-1995. For this reason the resulting figure for the change in emissions for *all* Annex I Parties taken together may be different.

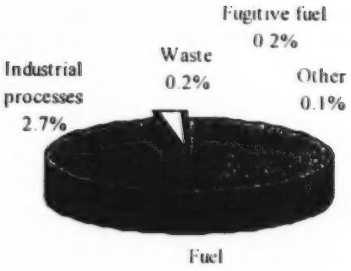
18. A comparison of projections for 2000 with inventories for the base year and the latest reported year suggests that, for about half of Annex I Parties, additional measures would be needed to return CO_2 and/or all GHG emissions to their 1990 level by 2000. Although the projections provided by Parties were not comparable and thus national projection figures could not be added, they nevertheless indicate that the ratio of projected total increase to projected total decrease is about 1.7:1, suggesting that CO_2 emissions in 2000 may be higher than in 1990. The return to 1990 levels is more likely for methane and nitrous oxide for the majority of Annex I Parties. The emissions of other GHGs are expected to grow significantly in absolute terms, although their relative contribution to total GHG emissions is projected for 2000 to be less than that of N_2O for most Parties.

Table 1. Total anthropogenic CO_2 emissions, excluding land-use change and forestry, 1990 - 1995, and projections for 2000 (Gigagrams and percentage)

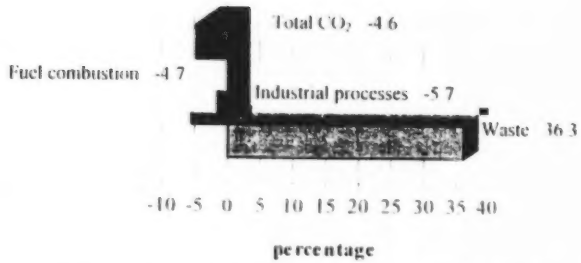
			Percentage relative to 1990, 1990=100					Projections	
	1990	Last Reported Value	1991	1992	1993	1994	1995	2000	percentage change from baseline
	(Gg)	(Gg)	%	%	%	%	%	(Gg)	(%)
Australia	273 123	285 501	101	102	103	105		332 799	15 1
Austria	61 880	62 020	107	97	96	96	100	57 300	-7
Belgium	116 090	121 297	103	102	99	104		125 200	8
Bulgaria	96 878	57 764	67	61	63	60		69859	-27 9
Canada	464 000	499 526	98	101	101	104	108	500 600	8
Czech Republic	165 490	128 817	93	85	81	77	78	139 000	-17
Denmark	52 025	62 132	121	110	114	121		53 753	-7 9
Estonia	37 797	21 628	97	73	55	57		17 500 - 23000	(-53 7)-(-39 2)
Finlanda	53 800	56 050		97	99	110	104	(58 000 - 60 000)	(8 - 12)
France	378 379	385 347	106	106	99	99	102	397 833	3 8
Germany	1 014 155	894 500	96	91	91	89	88	894 000	-12
Greece	82 100							94 500	15 1
Hungary	83 676	59 196	81	72	73	71		69741	-15 7
Iceland	2 147	2 282	96	102	107	105	106	2 697	26
Ireland	30 719	33 931	103	105	104	108	110	34 998	14
Italy	428 941							482 440	13 8
Japan	1 124 532	1 218 377	102	103	101	108	108	1 200 000	2 3
Latvia	22 976						49	16 956	-26 2
Luxembourg	13 188	12 661				96		7 556	-42 8
Monaco[b]	71	129							
Netherlands	167 550	183 400	104	103	105	105	109	173 500	4 0
New Zealand	25 476	27 367	102	110	107	107	107	31 080	22
Norway	35 544	37 880	95	97	101	106	107	44 000	22
Poland	478 880	371588	83	78		78		338 000 - 455 000	(-26 2) - (-0 7)
Portugal	42 148	46 212	106	118	112	110		54 274	40 3
Romania	198 479		71	62	61				
Russian Federation	2 375 591	1 633 517				69		1 930 000 - 2 026 000	(-17 2)-(-13 0)
Slovakia	60 032	48 516	88	81	77	72	81	(44 780 - 46 178)	(-25)-(-23)
Spain	227 322							276 523	24 1
Sweden	55 445	58 108	100	101	101	106	105	60 100	3
Switzerland	45 070	44 170	104	101	98	96	98	43 900	-7
United Kingdom	583 747	543 338	101	98	95	95	93	550 000	-5
United States	4 960 432	5 214 710	99	100	103	104	105	5 627 310	11

[a] Party did not provide estimate for 1991

[b] As Party did not provide estimate for 1995, but for 1996, this estimate is given in the table The trend in emissions is not given here since the estimate for 1990 includes only emissions from waste while the estimate for 1995 includes emissions from waste and fuel combustion



Shares of the main sources in total CO2 emissions, 1990



Change in CO_2 emissions by sector, 1995 relative to 1990.

Total CO2 emissions (excluding land-use change and forestry) in 1995 and projections for 2000, percentage relative to 1990

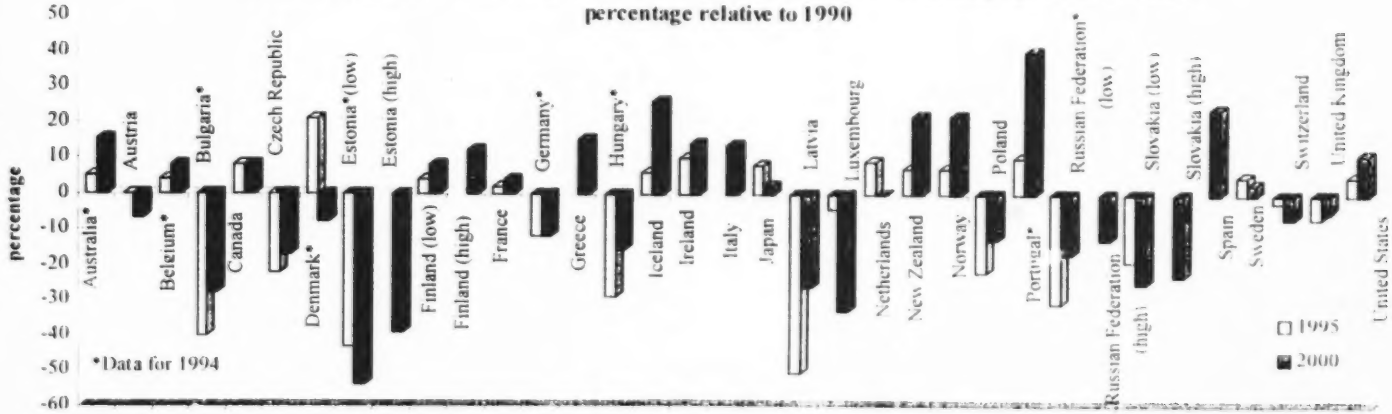


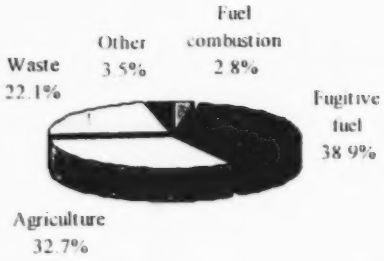
Table 2. Total anthropogenic CH_4 emissions, 1990 - 1995, and projections for 2000 (Gigagrams and percentage)

			Percentage relative to 1990, 1990=100					Projections	
	1990	Last Reported Value	1991	1992	1993	1994	1995	2000	percentage change from baseline
	(Gg)	(Gg)	%	%	%	%	%	(Gg)	(%)
Australia	5 590	5 302	95	95	95	95		6 480	3 8
Austria	587	580	98	98	98	99	99	600	2
Belgium	634	635	99	99	100	100		530	-15
Bulgaria (1988)	1 413		94	87	79	76		1057	-5 5
Canada	3 200	3 732	100	103	109	113	117	3 456	13
Czech Republic	888	733	92	87	82	80	83	742	-16
Denmark	407	401	100	100	100	99		354	-12 8
Estonia	323	188	89	70	56	58			
Finland[a]	246	241		100	99	100	98	226	-8
France	3 017	2 844	100	97	97	95	94	2 900	0
Germany	5 682	4 849	92	91	88	85		3 892	-32
Greece	343							< 343	< 0 0
Hungary[b] (1985-87)	664	776						218	-54
Iceland	14	14	99	98	98	99	97	13 5	-4
Ireland	811	812	98	99	99	99	100	837	3
Italy	3 901							2 965	-24 0
Japan	1 575	1 548	99	99	99	98		1 150	-16 7
Latvia	159						65	114	-28 2
Luxembourg	25	23				92		26	6 1
Monaco[c]									
Netherlands	1 104	1 063	102	98	97	97	96	788	-34
New Zealand	1 706	1 635	98	95	93	95	96	1 541	-10
Norway	432	469	100	101	104	108	109	414	-4
Poland (1988)	3 042	2472		81		81		1780	-11
Portugal	227	225	100	100	100	99			
Romania (1989)	2 328		74	65	65				
Russian Federation	26 690	23 880				89			
Slovakia	409	316	93	88	81	77	77	251 - 401	(-37)-0
Spain	2 151								
Sweden	324	296	99	99	99	94	91	284	-6
Switzerland	244	235	100	99	99	97	97	229	-6
United Kingdom	4 464	3 817	99	98	91	86	86	3 418	-22
United States	29 578	30 975	101	102	101	104	105	26 186	-11

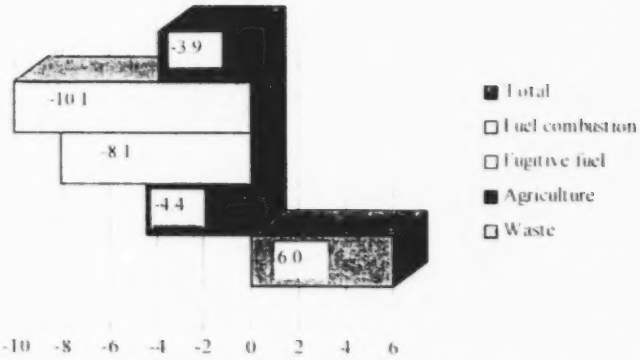
[a] Party did not provide estimate for 1991

[b] The trend in emissions is not shown here since the estimates for energy-related emissions for the base year were not fully consistent with estimates for 1991-1994 and estimates for emissions from waste were only reported for 1991-1994. Likewise, the emissions for 1994 and projections for 2000 are not presented in the graph below for these reasons

[c] Party did not provide estimates but indicated that emissions were negligible



Shares of main sources in total CH_4 emissions, 1990



Changes in CH_4 emissions by sector, 1995 relative to 1990, per cent

Total CH4 emissions in 1995 and projections for 2000, percentage relative to 1990

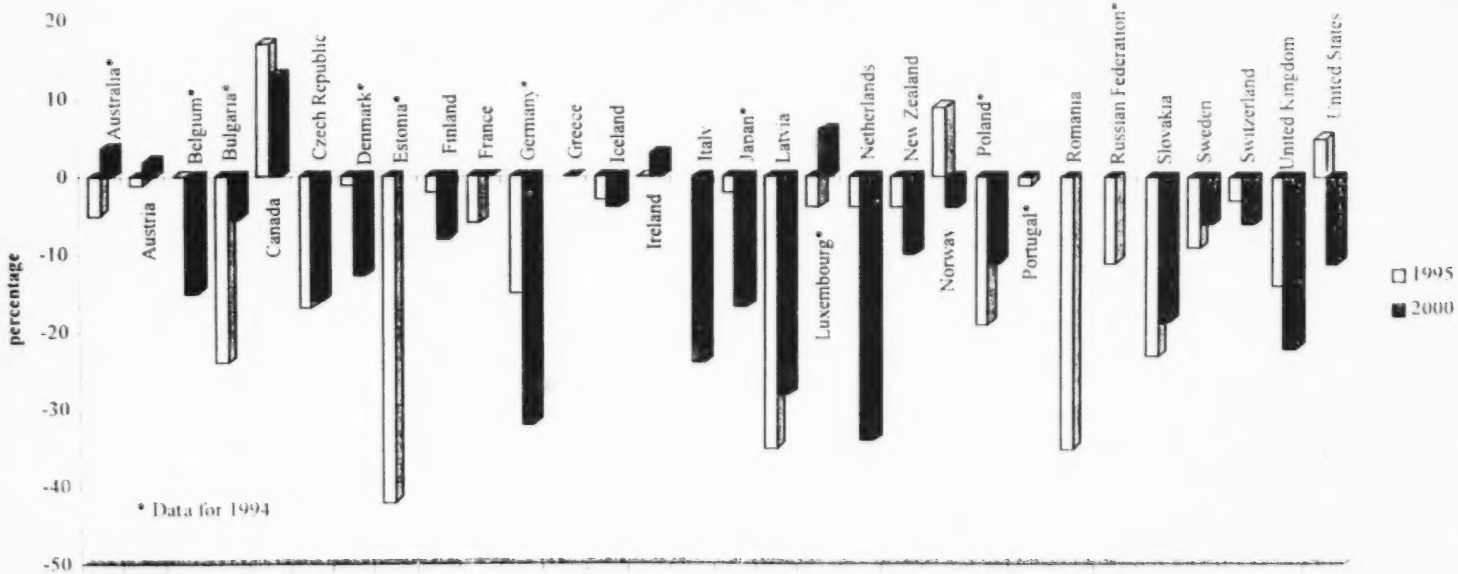
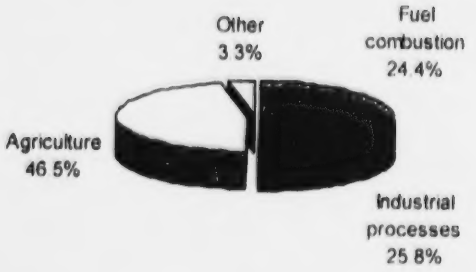


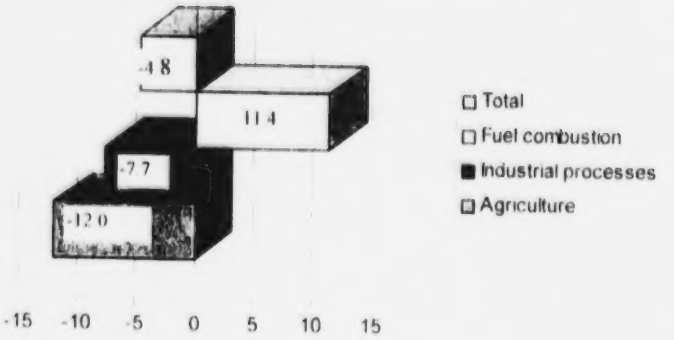
Table 3. Total anthropogenic N_2O emissions, 1990 - 1995, and projections for 2000 (Gigagrams and percentage)

			Percentage relative to 1990, 1990=100					Projections	
	1990	Last Reported Value	1991	1992	1993	1994	1995	2000	percentage change from baseline
	(Gg)	(Gg)	%	%	%	%	%	(Gg)	%
Australia	81.2	81.6	98	98	100	100		61.1	1.5
Austria	11.6	12.8	104	105	106	109	110		
Belgium	30.8	32.3	100	97	99	105		30.4	9
Bulgaria	30.8	18.0	75	63	57	58		16.3	-47
Canada	86.0	107.8	101	107	109	116	125	74.0	-14
Czech Republic	25.8	21.6	91	87	82	83	84	22	-12
Denmark	10.3	10.9	104	103	105	106		11.5	9.5
Estonia	2.4	1.3	98	77	60	55			
Finland [a]	18.0	18.0		94	100	100	100	21.5	19
France	181.7	173.5	99	96	90	93	95	93.0	-47.0
Germany	226.0	219.0	97	100	96	97		162.0	-28
Greece	13.7							13.7	0.0
Hungary	12.9	8.2	58	56	53	63		6.2	-26
Iceland	0.4	0.4	95	90	88	88	95	0.5	25
Ireland	29.4	26.0	86	87	87	88	89	26.0	-12
Italy	120.3							123.6	3.5
Japan	105.3	110.0	103	101	102	104		52.0	83
Latvia	2.4						28	1.4	-41.6
Luxembourg	0.7	0.9				133		0.7	0
Monaco [b]									
Netherlands	51.2	58.5	104	111	112	113	114	65.2	4
New Zealand	47.5	46.7	96	97	97	97	98	46.0	-3
Norway	15.0	14.0	100	87	93	93	93	16.0	5
Poland	58.9	50.0		85		85		61.8	4
Portugal	10.6	10.9	105	111	106	103			
Romania	122.7		74	56	80				
Russian Federation	228.0	134.5				59			
Slovakia	12.5	7.8	87	72	57	58	62	6.8 - 10.6	(-37)-(-3)
Spain	93.9								
Sweden	9.2	9.2	100	96	100	103	100	10.8	13
Switzerland	11.5	11.8	101	102	103	103	103	11.7	2
United Kingdom	120.0	95.0	95	81	73	83	79	42.9	-62
United States	425.0	467.0	100	102	106	108	110	367	-14

[a] Party did not provide estimate for 1991
[b] Party did not provide estimates but indicated that emissions were negligible



Shares of main sources in total N_2O emissions, 1990



Change in N_2O emissions by sector, 1995 relative to 1990, per cent

Total N2O emissions in 1995 and projections for 2000, percentage relative to 1990

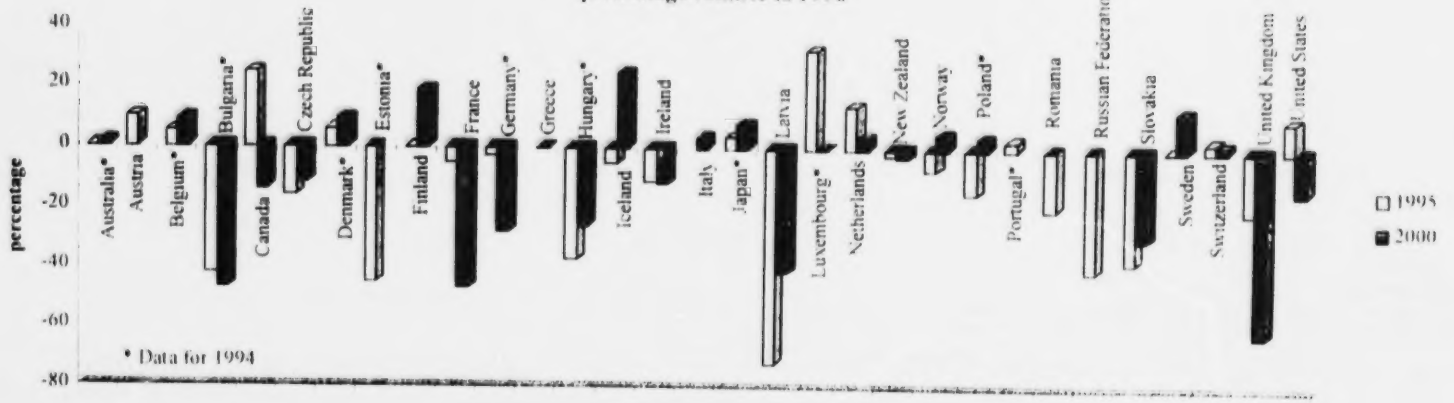


Table 4. Total anthropogenic emissions of all greenhouse gases[a], excluding land-use change and forestry, 1990 - 1995, and projections[b] for 2000 (Gigagrams of CO_2 equivalent and percentage)

	1990	Last reported value	Percentage relative to 1990, 1990=100					Projections	
			1991	1992	1993	1994	1995	2000	percentage change from baseline
	(Gg)	(Gg)	%	%	%	%	%	(Gg)	%
Australia	420 521	424 241	99	99	100	101		512 811	10 0
Austria	77 814	78 173	106	98	97	98	100		
Belgium	138 943	145 522	102	102	100	105		145 754	6
Bulgaria (1988)	136 099	85 870	73	67	66	63		101 011	-22
Canada	566 664	619 726	98	101	103	105	109	609 118	8
Czech Republic	192 130	150 913	92	85	82	78	79	161 402	-17
Denmark	63 974	74 924	117	108	111	117		66 106	-8 0
Estonia	45 309	25 969	96	73	55	57			
Finland	64 546	66 691		97	99	108	103	69 660	9
France[c]	498 067	498 855	104	104	98	97	100	498 643	-2 0
Germany	1 210 387	1 070 691	96	92	91	90	88	1 038 058	-14
Greece	93 550							107 288	13 0
Hungary[d] (1985-87)	101 619	78 039						77536	-22
Iceland	2 883	2 765	95	94	96	95	96	3 250	27
Ireland	56 861	59 060	99	100	100	103	104	60 625	7
Italy	548 259							597 200	7 0
Japan	1 235 986	1 347 200	102	104	103	109		1 244 815	2 0
Latvia	27 059	13 637					50	20 197	-27 0
Luxembourg	13919	13423				96		8 417	-30 0
Monaco									
Netherlands	215 357	236 154	99	99	104	105	110	219 160	-2
New Zealand	77 188	80 913	99	100	99	104	105	83 ?11	8
Norway	54 011	54 328	96	93	96	101	101	60 279	11
Poland (1988)	561 021	439 000	71	78		78		401 386 - 281 386	(-36) - (-18)
Portugal	50 195	54 314	105	116	110	108			
Romania (1989)	285 404		72	62	64				
Russian Federation	3 006 761	2 176 692				72			
Slovakia	72 995	57 891	89	82	77	72	79	55 840	-24
Spain	301 602								
Sweden	66 457	69 004	97	101	100	105	104	71 447	5
Switzerland	53 749	53 806	103	101	98	97	100	52 336	-6
United Kingdom	718 764	656 872	100	97	94	93	91	639 072	-10
United States	5 801 400	6 146 624	99	101	103	105	106	6 444 828	11

[a] Aggregated emissions of CO_2, CH_4, N_2O, and where reported HFCs, PFCs, SF_6, using IPCC 1995 global warming potentials

[b] For consistency, the data are presented for those Parties which provided projections for at least three main GHGs

[c] As Party only reported emissions of HFCs, PFCs and SF_6 for 1990 and not subsequent years, these emissions have not been included in this table for comparison and consistency purposes

[d] The trend in emissions is not shown here since the estimates for energy-related emissions for the base year were not fully consistent with estimates for 1991-1994 and estimates for emissions from waste were only reported for 1991-1994

Shares of individual gases in total GHG emissions, 1990

Total emissions of all GHGs in 1995 and projections for 2000, percentage relative to 1990

Table 5. Anthropogenic CO_2 emissions and removals[a] from land-use change and forestry and impact on total CO_2 emissions, 1990 & 1995, and projections for 2000 (Gigagrams and percentage)

	Land-use change and forestry, net emissions or removals		Percentage reduction or increase (-/+) of national CO_2 emissions taking into account land-use change and forestry		Projections	
	1990	Last reported year	1990	Last reported year	2000	percentage change from baseline[b]
	(Gg)	(Gg)	%	%	(Gg)	(%)
Australia[c]	121 688	-27 512	45	-10	121 992	-6 8
Austria	-13 300	-13 580	-21	-22		
Belgium[d]	-2 057	-2 057	-2	-2	-2 057	0
Bulgaria (1988)	-4 657	-6 941	-5	-12	-5 801	0
Canada[e]						
Czech Republic	-2 281	-5 454	-1	-4	-5 000	-250
Denmark	-2 600		-5		-2 600	0
Estonia	1 796	1 646	5	8		
Finland[f]	(-30 000)- (-19 000)	(-14 000) - (-7 000)	(-56) - (-35)	(-22) - (-12)	(-12 000) - (-17 000)	(62)-(46)
France	-33 218	-46 801	-9	-12	-39 000	-21 8
Germany	-30 000	-30 000	-3	-3		
Greece						
Hungary (1985-87)	-3 097	-4 820	-4	-8		
Iceland[g]						
Ireland	-5 160	-6 230	-17	-18	-7 580	-47
Italy	-36 730		-9		-46 730	-27 2
Japan	-83 341	-94 619	-7	-8	-92 000	-2 2
Latvia	-14 300	-15 831	-62	-141	-8 940	37 5
Luxembourg						
Netherlands	-1 500	-1 700	-1	-1	-1 700	-13
New Zealand	-20 569	-13 487	-81	-59	-18 944	-8
Norway	-10 200	-13 637	-29	-36	-11 000	17
Poland (1988)	-1 408	-43 861	0	-12		
Portugal						
Romania (1989)	-2 925		-1			
Russian Federation	-392 690	-568 850	-17	-35		
Slovakia	-4 257	-5 116	-7	-11	-5 227	-24
Spain	-23 166		-10		-25 700	-10 9
Sweden[h]	-34 368	-30 000	-62	-54	-29 000	15
Switzerland	-4 360	-5 100	-10	-12	-5 100	-17
United Kingdom[i]	18 776	9 945	3	2	11 100	-46
United States	-458 000	-428 000	-9	-8	-411 040	10 4

[a] Negative values in Gg denote removal of CO_2. Positive values denote a net source of emissions

[b] Negative value in percentage denotes a larger removal in 2000 than the base year, or a decrease in net emissions

[c] The 1990 estimate includes emissions from forest and grassland conversion of 152,062 Gg. Emissions from forest and grassland conversion were not estimate for the last reported year

[d] As estimates for 1995 were not available, estimates for the last reported year, 1994, are given in this table

[e] The Party was not able to provide estimates in the manner provided for in the IPCC Guidelines, however did include in its national communication a detailed description of the model used for estimation of the carbon fluxes in its forests

[f] A range of estimates of emissions from cultivated peatlands and non-viable drainage areas were included, thus a range for the total estimates from land-use change and forestry are given in this table

[g] The Party did not provide any official estimates, however did include in its national communication a description of the ongoing activities and preliminary estimates from the sector

[h] As estimates for 1995 were not available, estimates for the last reported year, 1992, are given in this table

[i] The estimates include emissions and removals from wetland drainage and peat extraction

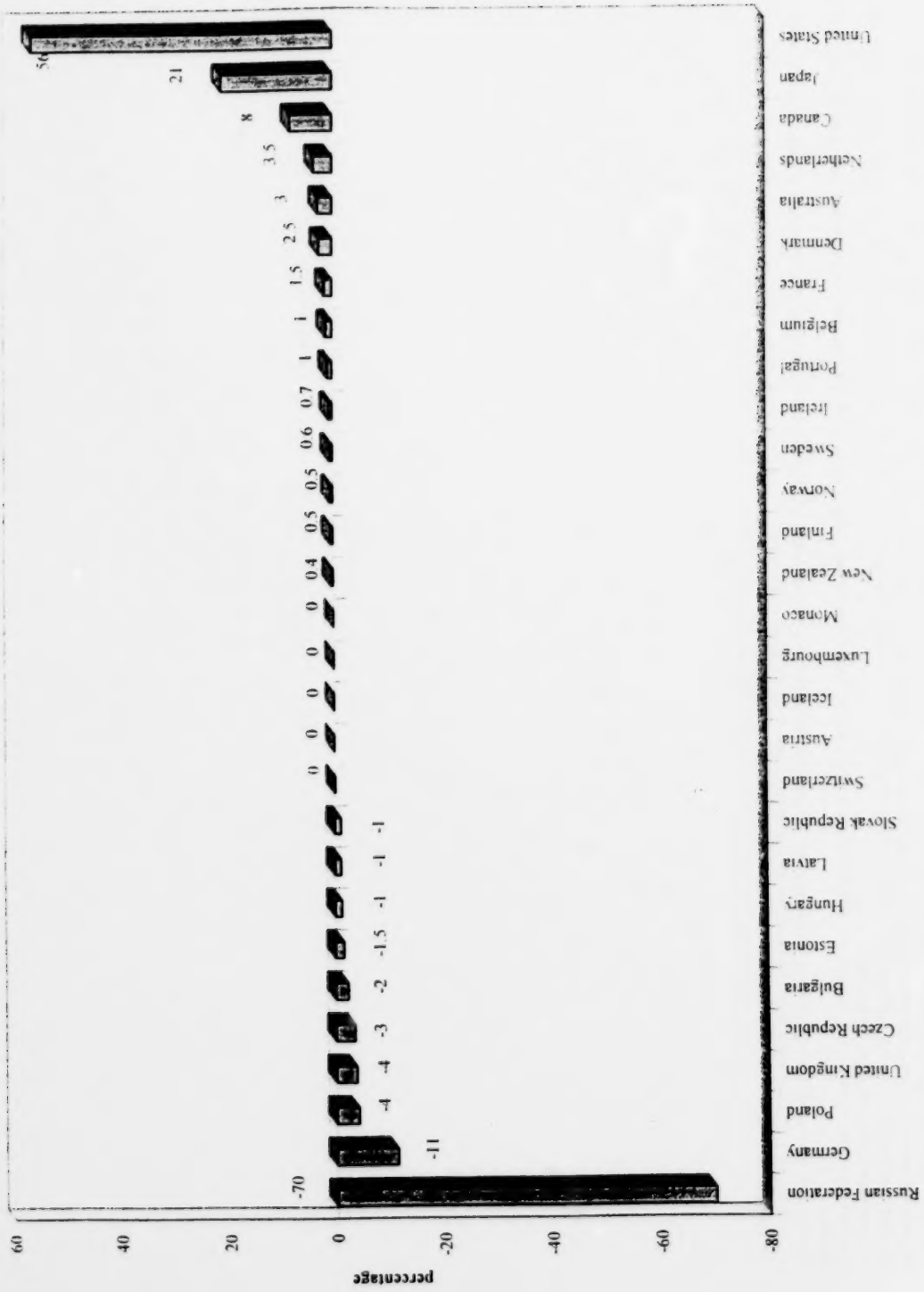


Figure 1. Contributions of individual Parties into decrease or increase of total CO_2 emissions aggregated for all Annex I Parties in the period 1990-1995

Figure 2. Projected increase or decrease in CO_2 emissions in 2000 relative to 1990, Gg